FIG. 1

$$k_{30} = \frac{10}{40} = 0.25 \qquad k_{80} = \frac{40}{20} = 2$$

FIG. 10

RELATION BETWEEN FLOW AND TRAVEL

FIG. 2

FIG. 3

FIG. 4

$P_1 = 300 \text{ PSI}$

LC

$P_2 = 400 \text{ PSI}$

LINEAR CHAR.

$\dfrac{195}{175} = 1.11$

FIG. 5

$\triangle P$
200

$\triangle Pv = 195 \text{ PSI}$ $\triangle Pv = 175 \text{ PSI}$

Q
MIN

Q   Q
NORM. MAX

Q

FIG. 6

100%   a = 0,01

0,05

Flow   0,1
Q (x)
0,2

0,4
0,6
1

50%

Linear Valve

0   50%   100%

Travel x

FIG. 7

PUMPED SYSTEM

160

ΔPv @ Qmax =20

ΔPv @ Qmin =130 PSI

$$\frac{\Delta Pv\ Qmin}{\Delta Pw\ Qmax} = \frac{130}{20} = 6.5 = Eq.\%Vw$$

Q_MIN   Q_MAX

FIG. 8

FIG. 9

100%

Flow
Q (x)

50%

Exponential

linear

R=10

20

40

80

200

2000

0   50%   100%

Travel x
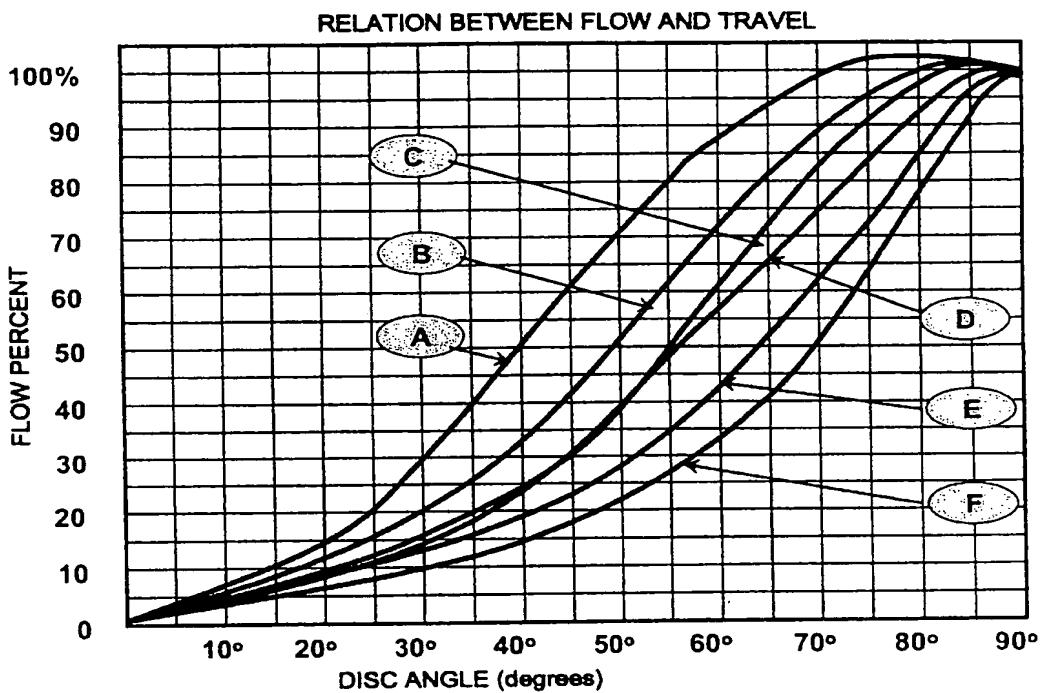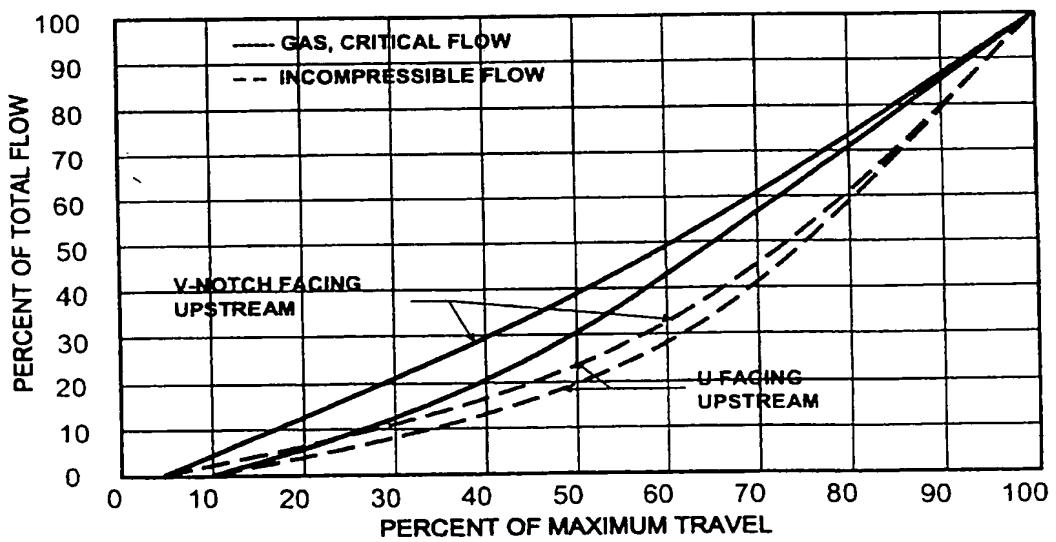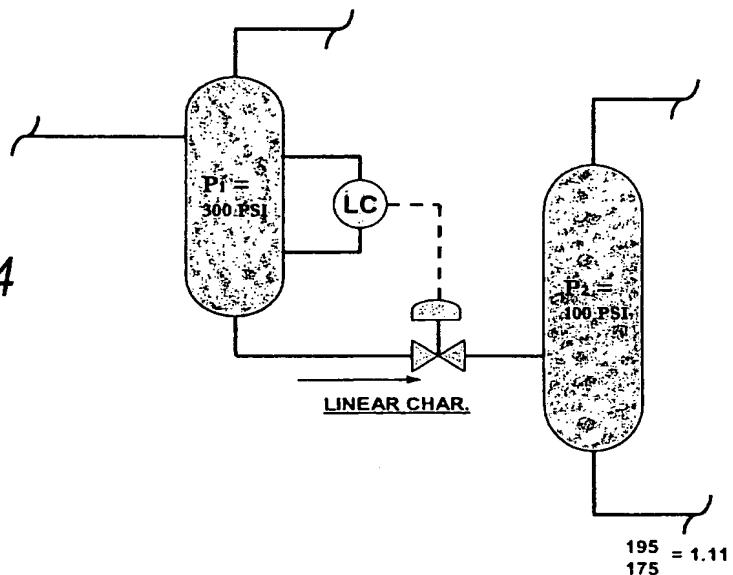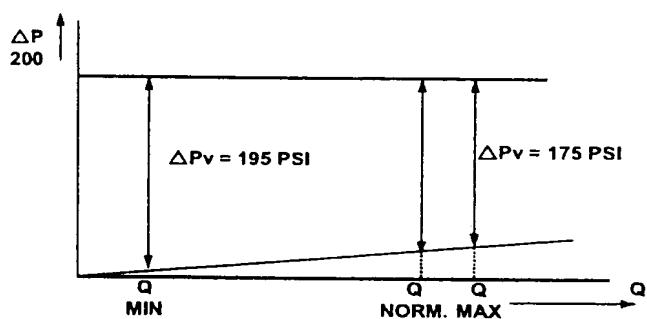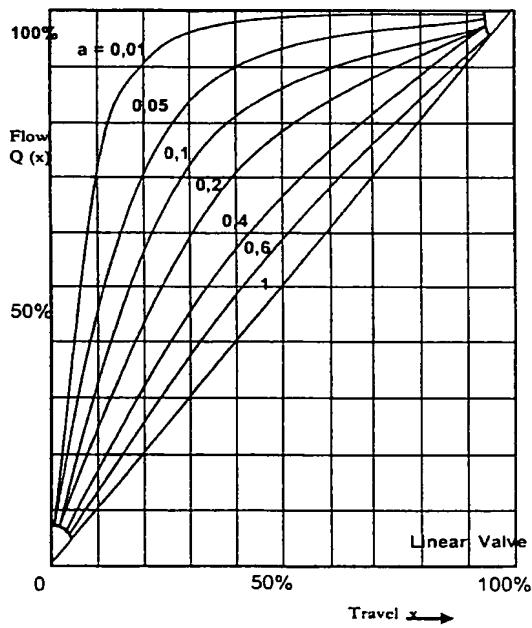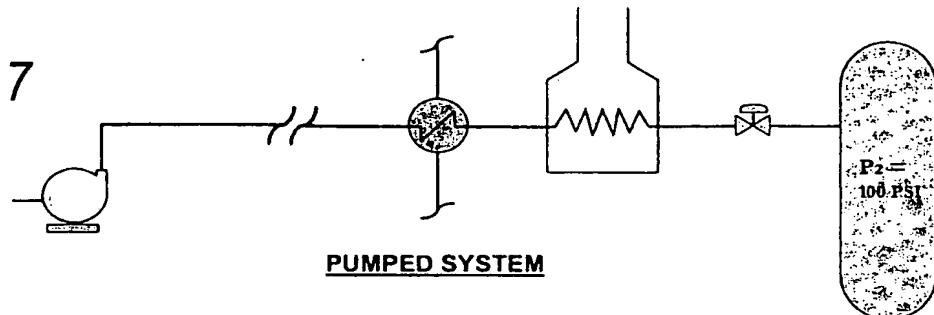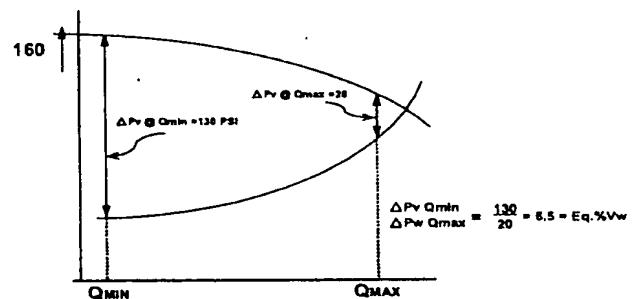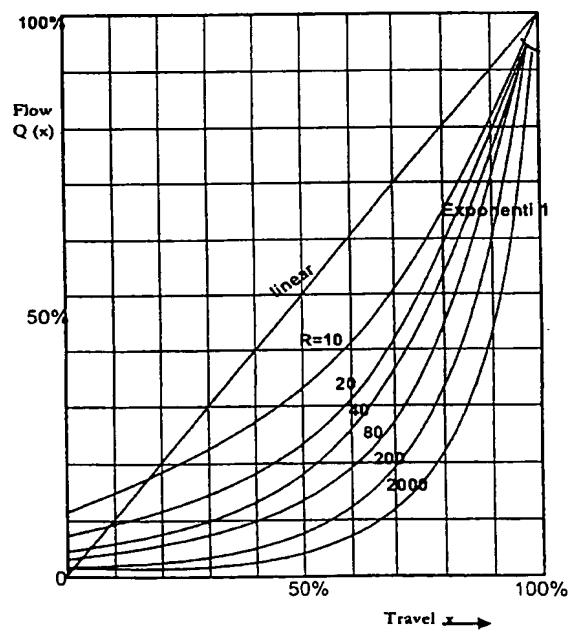
Example of assigning significant Pressure Drop across CV

RATIO 2:3 INSTALLED CHARACTERISTICS (PUMP WITHOUT OVERDESIGN).

% LIFT

$C_v \, sel = \dfrac{C_v \, req}{0.8}$

$C_v \, sel = \dfrac{C_v \, req}{0.7}$

$C_v \, sel = \dfrac{C_v \, req}{0.5}$

$C_v \, sel = \dfrac{C_v \, req}{0.3}$

H

PUMP CURVE

LINE CURVE

2

3

NORMAL FLOW   % FLOW

% OF NORMAL FLOW

FIG. 11

% LIFT

% OF NORMAL FLOW
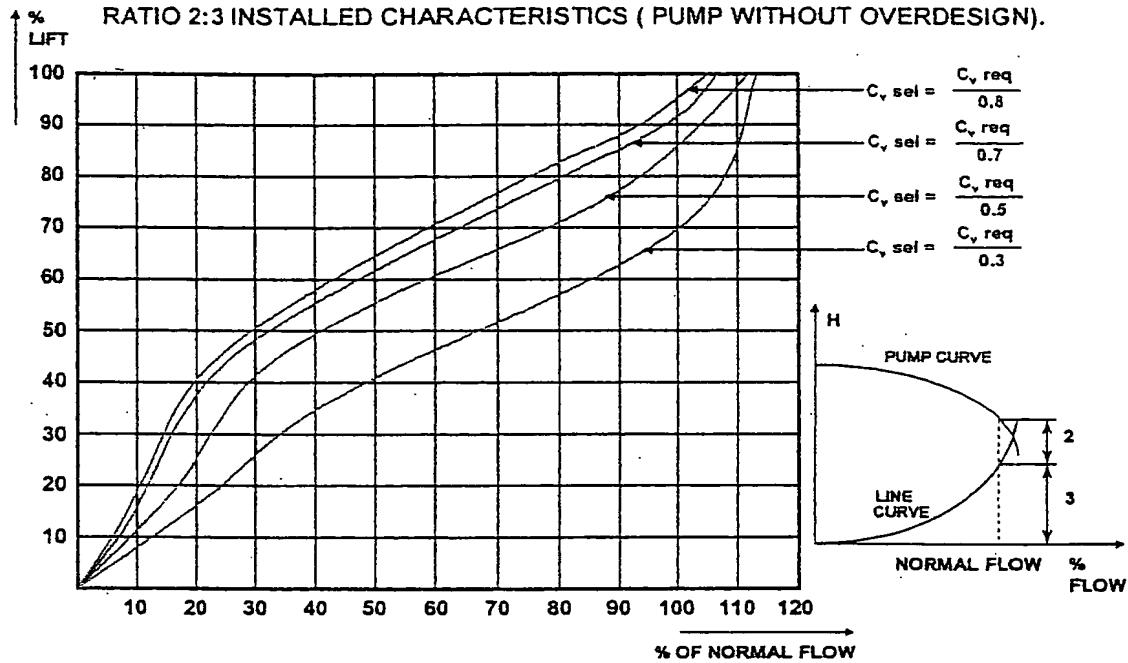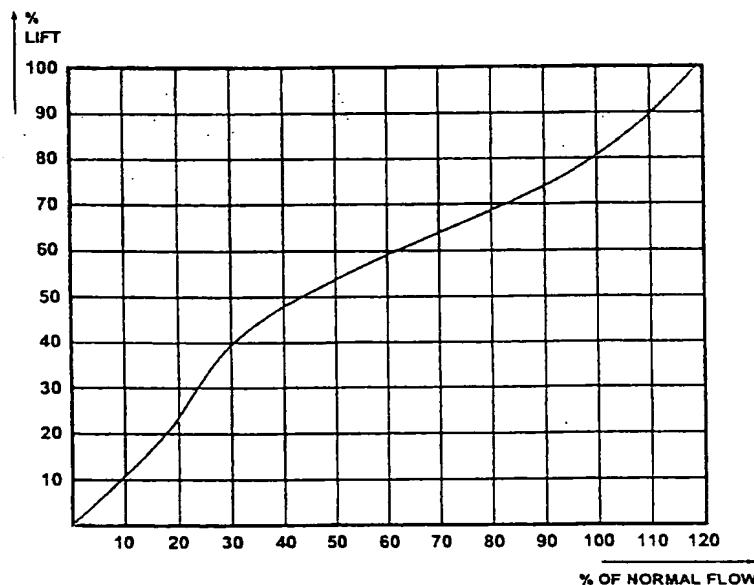
FIG. 12
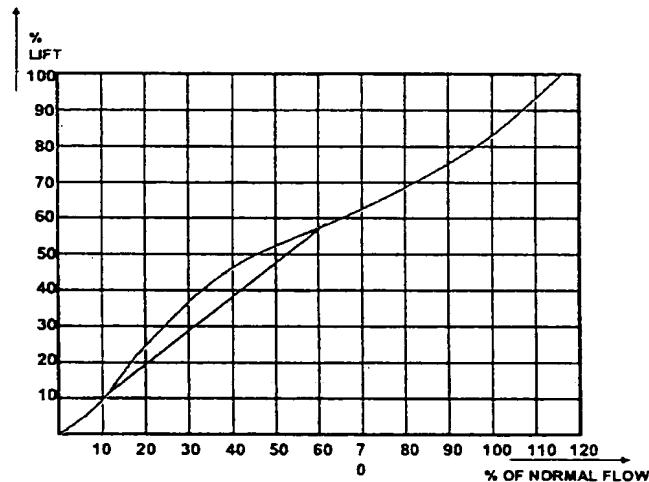
FIG. 13A

FIG. 13B

FIG. 13C

FIG. 14

100

S.P. → (−) → CONTROLLER → POSITIONER → VALVE → PROCESS →

102   104   106   108

TRANSMITTER

FIG. 15

50% SIGNAL → DVP ↕ 50% TRAVEL
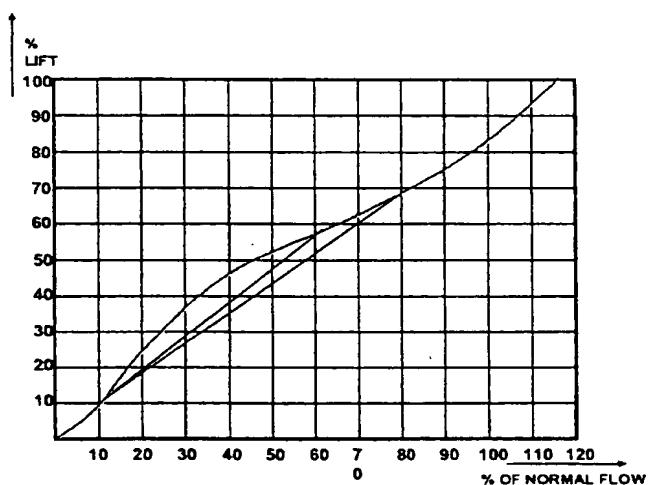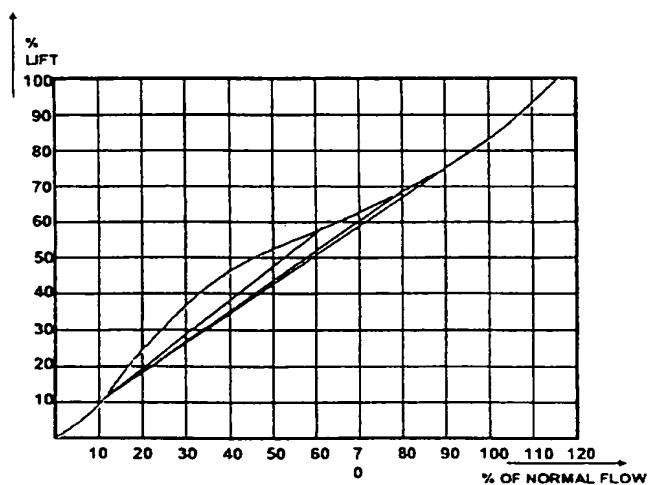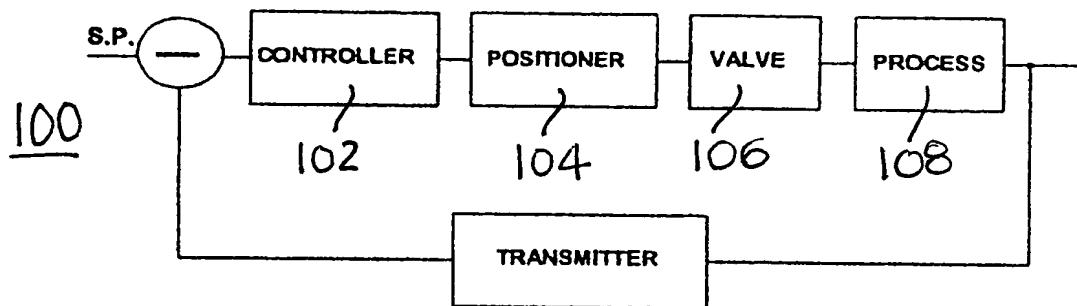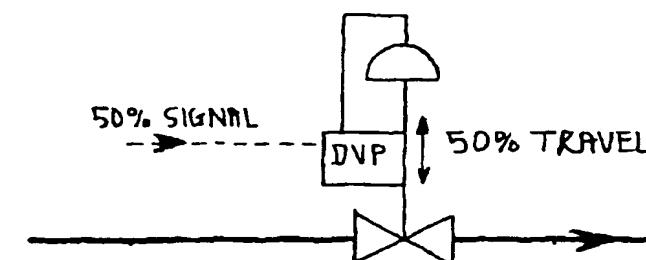
Standard Valve Positioner Function

50% SIGNAL → DVP

50% FLOW

DPT
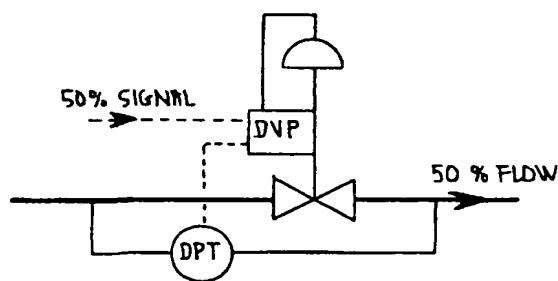
Automatic Valve Characterizer (AVC) Function

FIG. 16